

REMARKS

Claims 1-45 are pending in the application. Claims 1, 17, 24, 30, 35, and 43 have been amended. Claim 21, 22, 26, and 39 have been canceled. New claims 46-47 have been added. The amendments and cancellation of the claims are made without prejudice or disclaimer, and Applicants reserve the right to pursue the original scope of the claims as provided prior to the cancellation or amendments, such as through continuation practice.

Support for the amendment to claim 1 can be found throughout the Specification, and specifically, for example, at paragraphs [0012], [0020], [0063], [0065], and original claims 21 and 22 of the published application. Claim 17 is amended to clarify the claim language. Support for the amendment to claim 24 can be found throughout the Specification, and specifically, for example, at paragraphs [0012], [0056], and [0058] of the published application. Support for the amendment to claim 30 can be found throughout the Specification, and specifically, for example, at paragraph [0011]. Support for the amendment to claim 35 can be found throughout the Specification, and specifically, for example, at paragraph [0062]. Support for the amendment to claim 43 can be found throughout the Specification, and specifically, for example, at paragraphs [0012], [0020], [0063], and [0065] and in original claim 39. Support for new claim 46 can be found throughout the Specification, and specifically, for example, at paragraphs [0056] and [0058]. Support for new claim 47 can be found throughout the Specification, and specifically, for example, at paragraph [0059]. Accordingly, no new matter has been added.

Applicants respectfully request reconsideration of the application in view of the amendments made above and the remarks that follow.

Drawings

Figure 8 has been amended to show the interlocks 813 as described in the specification at paragraph [0057]. No new matter has been added. The “diagnostic tool 563” is shown in Figure 5. The Examiner is referred to the Specification, for example, paragraph [0039], showing that the terms applicator and mount are used interchangeably. The “wireless communications link” is shown in Figure 13 as elements 1318 and 1320 as described in paragraph [0066]. Accordingly, the Examiner is respectfully requested to withdraw the objection to the drawings.

Rejections under 35 U.S.C. § 112

The Examiner states that claims 17 and 30 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 30 has been amended to clarify the claim. The term “solid state light emitters” in claim 17 is well-known in the art. However, to expedite prosecution, claim 17 has been amended to recite “solid state light emitting sources”. Accordingly, the Examiner is requested to withdraw the indefiniteness rejections.

Rejections under 35 U.S.C. § 102(b)

The Office Action rejects claims 1-7, 9-15, 17-22, 24-28, 30, 31, and 35-44 as being anticipated by Russell (U.S. Patent No. 6,290,713 (‘713)), and by Alexander et al. (U.S. Patent No. 5,913,883 (‘883)). Applicants respectfully traverse these rejections.

Anticipatory Rejection of claims 1-7, 9-15, 17-22, 35-44

Independent claim 1, and claims dependent thereto, are directed to an optical dermatology apparatus comprising a plurality of optical radiation sources, a mount in which the sources are positioned at selected locations, the mount being adapted for positioning adjacent a treatment region of a subject’s body, and controls for *selecting* and operating *individual* sources in a *selected sequence* to form an irradiation pattern.

Independent claim 35 has been amended to recite a control circuitry electrically coupled

to said radiation sources for *selecting and actuating* the individual sources in *a selected sequence to form* an irradiation pattern of said radiation sources for performing a treatment protocol. Independent claim 43 has been amended to recite “a control circuitry electrically coupled to said radiation sources for selective actuation thereof *to form a selected irradiation pattern*”.

The *selected sequence* can, for example, irradiate a specific region of the skin multiple times interspersed with periods of non-irradiation (See, for example, paragraph [0012]). An optical dermatology apparatus with controls that can operate sources in a *selected sequence* provides multiple advantages (e.g., provides selected treatment regiments to specific treatment regions and reduces the amount heat generated at a specific time enabling the use of higher powered sources in small devices) over an apparatus that can simply control the *number* of sources that are powered.

Independent claims 1 and 43 have also been amended to recite *a diagnostic sensor mounted in said mount for identifying skin conditions in the treatment region and generating signals in response to such detected conditions*, and controls or control circuitry for operating said sources in an irradiation pattern based on input from the diagnostic sensor. The diagnostic sensor allows a specific portion of the patient to be identified as having a particular *skin condition*. Based on the *identified skin condition*, the controls will operate the sources in a selected sequence such that only the area of the patient in need of treatment is irradiated in an irradiation pattern specific for the *identified skin condition*. Support for these amendments can be found throughout the specification and claims as filed, or specifically, at paragraphs [0023], [0063], [0064], and in Figure 13.

Independent claim 35 has also been amended to recite “*a switching array coupled to a power supply to supply power to one or more of the radiation sources, wherein said switching array is formed of a plurality of individual switches*”. Support for the amendment to claim 35 can be found throughout the Specification, and specifically, for

example, at paragraph [0062]. The benefits to using the switching array are described in the Specification at paragraph [0062]:

“the power source utilized may be a relatively small and inexpensive power supply that does not generate substantial heat, and therefore *does not require significant, if any, cooling* of the control box, the light sources in applicator 1211 or of the subject's skin.”

Russell reference

The Russell reference, in contrast to the claimed invention, is designed “to render the emitted light more *uniform*.” (See Russell, col. 4, lines 16-22). The Russell reference teaches away from using individual light sources at col., 10, lines 15-21:

“at least a portion of the interface preferably causes the light emitted by the plurality of light-generating sources to be diffused or directed as desired. Such diffusion or direction is effective to provide a *more uniform, constant and intense light pattern* on the contact surface relative to a similar apparatus including a plurality of discrete light emitting sources without light diffusion.”

In addition, the Russell reference does not teach or disclose a *switching array*, as required by amended independent claim 35, and claims dependent thereto. The Russell reference does not teach or suggest the associated advantages of a *switching array*, as taught in the present Specification (i.e., it does not require significant, if any, cooling of the control box, the light sources in applicator or of the subject's skin (see, paragraph [0062] discussed above). In contrast, the device described in the Russell reference specifically discloses the use of cooling (see, for example, col. 3, line 50; col. 4, lines 6-7; and col. 4, lines 40-42).

Furthermore, as conceded by the Examiner on page 4 of the Office Action, the Russell reference does not teach a *diagnostic sensor*, as recited by the amended independent claims 1 and 43, and claims dependent thereto.

Alexander reference

The Alexander reference, in contrast to the claimed invention, does not disclose or even suggest controls that operate optical radiation sources in a *selected sequence*. The

Alexander reference simply discloses that the “number of LED’s 20 provided in combination with mask 16 may be selectively determined depending on the needs of the user.” Specifically, the Alexander reference states that the “more LED’s 20 used, the more beneficial light will be provided...” and the “less LED’s used, the less beneficial light will be provided.” (See Alexander reference, col. 3, line 53-61). Thus, the Alexander reference simply discloses that the *number* of LED’s powered may be controlled, but not that any are powered in a *selected sequence*.

In addition, the Russell reference does not teach or disclose “a *switching array* coupled to a power supply to supply power to one or more of the radiation sources, wherein said switching array is formed of a plurality of individual switches and a control circuitry electrically coupled to said radiation sources and said switching array *for selecting and actuating the sources in a selected sequence* to form an irradiation pattern”, as required by amended independent claim 35, and claims dependent thereto. Since the Russell reference merely discloses controlling the number of LED’s, there is no reason to add such a switching array to the Russell device.

Furthermore, as conceded by the Examiner on page 4 of the Office Action, the Alexander reference does not teach a *diagnostic sensor*, as recited by the amended independent claims 1 and 43, and claims dependent thereto.

None of the cited references, Russell ‘713 or Alexander ‘883, teaches or suggests a *diagnostic sensor mounted in said mount for identifying skin conditions in the treatment region and generating signals in response to such detected conditions*, as required by independent claims 1 and 43 (and claims dependent thereto). Furthermore, the cited references do not teach or disclose a *switching array*, as required by independent claim 35 (and claims dependent thereto). Hence, the cited art fails to teach or suggest salient features of claimed apparatus and the associated advantages. Since each and every element of pending independent claims 1 and 35, and 43, and claims 2-7, 9-15, 17-22, 36-

42, and 44 that depend thereto, is not disclosed by the cited art, the Examiner is respectfully requested to withdraw the anticipatory rejections.

Anticipatory Rejection of claims 24-28, 30, 31

Independent claim 24, and claims dependent thereto, are directed to a method of *applying a filler material to a treatment region of a subject, wherein the filler material optically matches the treatment region thereby minimizing optical discontinuities; and selecting and operating at least some of a plurality of optical radiation sources mounted adjacent a treatment region of a subject in a selected sequence to form an irradiation pattern.*

The advantages to applying a filler material to the treatment region, wherein the filler material optically matches the treatment region is described in the Specification at paragraphs [0055] and [0056]:

“[I]t is preferable that the entire applicator be designed so as to maintain a substantially uniform spacing between radiation sources 825 and the subject's skin. Non-uniformity in this spacing can lead to non-uniformity in treatment and makes control of the treatment far more difficult....It is therefore preferable that gap 828 be filled with a viscous gel or lotion or be filled by an elastic mask made of an optical resin (silicon) or similar material. This mask can be made as a double replica of the area to be treated, can be synthesized from a 3-D photograph (digital or analog) or can be of a material which is soft enough to mold to the subject's face when applied to the face and which then sets to conform to the subject's face. The material used should provide a good optical match with the subject's face/skin to minimize optical discontinuities. Such a fill can be more comfortable for the subject, can assure proper positioning of the applicator on the subject's face and, by permitting tight control of the spacing between the radiation source(s) and the subject's skin, provide more efficient and safer operation.”

The cited references, Russell '713 or Alexander '883, do not teach or suggest the use of *a filler material to a treatment region of a subject, wherein the filler material optically matches the treatment region thereby minimizing optical discontinuities; and selecting and operating at least some of a plurality of optical radiation sources mounted adjacent a treatment region of a subject in a selected sequence to form an irradiation*

pattern. Hence, the cited art fails to teach or suggest salient features of claimed apparatus and the associated advantages. Since each and every element of pending independent claim 24, and claims 25-28, 30, 31 that depend thereto, is not disclosed by the cited art, the Examiner is respectfully requested to withdraw the anticipatory rejections.

Rejections under 35 U.S.C. § 103(a)

Obviousness rejections of claims 8, 23, 29, and 34

Claims 8, 23, 29, and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Russell or Alexander in combination with Eckhardt et al. (US2003/0018373).

As discussed above, independent claim 1 upon which claims 8 and 23 are dependent, is amended to recite “controls for *selecting and sequentially* operating individual sources in *a selected sequence* to form an irradiation pattern; *a diagnostic sensor mounted in said mount for identifying skin conditions in the area of a patient's skin and generating signals in response to such detected conditions and said controls operate said sources based on input from the diagnostic sensor.*”

None of the cited references, Russell '713, Alexander '883 or Eckhardt, teaches or suggests a *diagnostic sensor mounted in said mount for identifying skin conditions in the treatment region and generating signals in response to such detected conditions,*

As discussed above, dependent claims 29, and 34, which depend on independent claim 24, are amended to recite a method of *applying a filler material to a treatment region of a subject, wherein the filler material optically matches the treatment region thereby minimizing optical discontinuities; and selecting and operating at least some of a plurality of optical radiation sources mounted adjacent a treatment region of a subject in a selected sequence to form an irradiation pattern.*

None of the cited references, Russell '713, Alexander '883 or Eckhardt, teaches or suggests *applying a filler material to a treatment region of a subject, wherein the filler material optically matches the treatment region thereby minimizing optical discontinuities*; and *selecting and operating at least some of a plurality of optical radiation sources mounted adjacent a treatment region of a subject in a selected sequence to form an irradiation pattern*.

For all the reasons recited above, it is clear that neither the Russell reference or Alexander reference, nor the Eckhardt reference discloses or suggests the claimed invention, and that even if combined they do not disclose or suggest the claimed invention. Thus, these references fail to disclose or suggest every element recited by claims 8, 23, 29, and 34. Applicants, therefore, respectfully request that the Examiner withdraw all the obviousness rejections of claims 8, 23, 29, and 34.

Obviousness Rejections of claims 32, 33, 43-45

Claims 32, 33, and 43-45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Russell or Alexander et al. in combination with Altshuler et al. (US 6,015,404). Applicants respectfully traverse this rejection.

As discussed above, dependent claims 32 and 33, which depend on independent claim 24, are amended to recite a method of *applying a filler material to a treatment region of a subject, wherein the filler material optically matches the treatment region thereby minimizing optical discontinuities*; and *selecting and operating at least some of a plurality of optical radiation sources mounted adjacent a treatment region of a subject in a selected sequence to form an irradiation pattern*.

None of the cited references, Russell '713, Alexander '883 or Altshuler et al., teaches or suggests *applying a filler material to a treatment region of a subject, wherein the filler material optically matches the treatment region thereby minimizing optical*

discontinuities; and *selecting* and operating at least some of a plurality of optical radiation sources mounted adjacent a treatment region of a subject in *a selected sequence to form* an irradiation pattern. Furthermore, there is no reason to add such a feature to the devices of the cited references. Accordingly, claims 32 and 33 are patentable over the cited references.

None of the cited references teach a diagnostic sensor for identifying skin conditions

As discussed above, independent claim 43, on which claims 44-45 are dependent, has been amended to recite *a diagnostic sensor mounted in said mount for identifying skin conditions in the treatment region and generating signals in response to such detected conditions*, and control circuitry for operating said sources in an irradiation pattern based on input from the diagnostic sensor. The diagnostic sensor allows a specific portion of the patient to be identified as having a particular *skin condition*. Based on the *identified skin condition*, the controls will operate the sources in a selected sequence such that only the area of the patient in need of treatment is irradiated in an irradiation pattern specific for the *identified skin condition*.

The Office Action states that:

“Russell or Alexander et al teach a device as claimed except for the diagnostic sensors that prevent the operation of the sources if the device is not properly positioned. Altshuler et al teach an irradiation device with *diagnostic sensors that do not allow the device to be actuated unless the device is properly positioned.*” (Emphasis added)

In contrast, the claimed invention recites a diagnostic sensor mounted in said mount for *identifying skin conditions*. Table 1 of the Specification discloses wavelength ranges that can be used to treat a variety of skin conditions, such as wrinkles, scars, psoriasis, etc. As discussed in the Specification, the diagnostic sensor recited in the claimed invention identifies a particular *skin condition*, generates signals in response to such detected conditions, and the control circuitry operates the sources based on input from the diagnostic sensor:

"The sensor 1307 can transmit the image, via the communications module 1312, to the computer 1316 for analysis. The sensor can be returned to the compartment 1306, and the treatment module can be introduced into the compartment 1305. Upon analysis of the date received from the sensor to identify a *particular skin condition*, the computer 1316 can transmit control signals to a control circuitry 1326 of the treatment module to actuate selected ones of the radiation sources, or a sequence of radiation sources, to effectuate appropriate treatment protocol. For example, if the analysis of the data indicates the presence of one or more age spots with a pigmentation index of 1380, the computer can cause selective actuation of one or more of the radiation sources at a fluence of about 1310 J/cm² to treat the spots." (See paragraph [0067])

None of the cited references, Russell '713, Alexander '883 or Altshuler et al., teaches or suggests a diagnostic sensor mounted in said mount for *identifying skin conditions* in the treatment region and *generating signals in response to such detected conditions*, and control circuitry for operating said sources in an irradiation pattern based on input from the diagnostic sensor. Furthermore, there is no reason to add such a feature to the devices of the cited references.

Therefore, even if combined, the cited references do not disclose or suggest the claimed invention. Thus, these references fail to disclose or suggest every element recited by the claims. Accordingly, the claims are patentable over the cited references, and the Examiner is respectfully requested to withdraw the obviousness objections.

New Claims

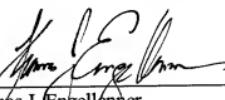
New claims 46-47 have been added. Support for new claim 46 can be found throughout the Specification, or specifically, for example, at paragraphs [0056] and [0058]. Support for new claim 47 can be found throughout the Specification, or specifically, for example, at paragraph [0059]. The new dependent claims depend from currently amended independents claim 24, which Applicants believe to be allowable in light of the above remarks.

CONCLUSION

In summary, the above-identified patent application has been amended and reconsideration is respectfully requested for all the reasons set forth above. In the event that the amendments and remarks are not deemed to overcome the grounds for rejection, the Examiner is kindly requested to telephone the undersigned representative to discuss any remaining issues.

Respectfully submitted,

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